Institute for Materials Science

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Institute for Materials Science Distinguished Lecture Series

Professor Tony Rollett
Department of Materials Science & Engineering
Carnegie Mellon University

Advanced Characterization of Additively Manufactured Materials, including Synchrotron–based 3D X-rays

Wednesday, August 3, 2016
2:00 - 3:00pm
MSL Auditorium (TA-03 - Bldg 1698 - Room A103)

ABSTRACT: ***To come...***

Background: Professor Rollett's research program emphasizes quantification of microstructure, especially in three dimensions, and its impact on properties and processing using both computational and experimental techniques. Applications include additive manufacturing, microstructural damage, fatigue, texture, and anisotropy. Important recent results include 3-D observations of porosity in 3-D printed metals, mapping of microstructure and residual stress in polycrystals, mechanical twinning in Zr, the appearance of new grains during grain growth via annealing twin formation, the application of spectral methods to micro-mechanics, the effect of second phase particles on grain size stabilization in superalloys; anisotropy of orientation gradients in metals; development of constitutive relations for sheet metal formability; measurement of anisotropic grain boundary energies and mobilities; development of methods for synthesizing statistically representative three dimensional microstructures; measurement and modeling of texture development during processing (recrystallization) in aluminum alloys; effect of solute on boundaries and triple junctions. The ultimate aim is to put microstructure-properties relationships on a quantitative basis for the prediction and optimization of materials processing and application.

Bio: Professor Rollet received his M.A. in Metallurgy & Materials Science at Cambridge University, UK and his Ph.D. in Materials Engineering, Drexel University, 1987. He was at Los Alamos National Laboratory from 1979 to 1995, starting as a technical staff member. In 1995 he left his position of Deputy Deputy Division Director of Materials Science & Technology Division for a professorship and Department Head position at Carnegie Mellon University.

His many honors include: *Membre d'Honneur* (Member of Honor), French Society of Materials & Metallurgy (SF2M), 2015; *Cyril Stanley Smith Award*, TMS, 2014; *Chercheur d'Excellence* (Outstanding Researcher) at the University of Lorraine, Metz, France, 2012; *Brahm Prakash Professor* at the Indian Institute of Science (Bangalore). 2011; *Fellow of TMS*, 2011; *Fellow of the Institute of Physics* (UK), 2005; H*owe Medal for Best Paper in Metallurgical Transactions A*, 2004; *Fellow of ASM-International*, 1996; and the *Award for Technology Transfer* from the Federal Laboratories Consortium, 1989.

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Hosted by Alexandar Balatsky * Director of the Institute for Materials Science

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